

What is claimed is:

1. An optical recording medium-manufacturing apparatus comprising:

5       a punching blade section that is pushed into a disk-shaped substrate to thereby punch a central hole through the disk-shaped substrate, the punching blade section having a cutting edge;

10       a pressing device that presses the disk-shaped substrate toward said punching blade section to thereby push said punching blade section into the disk-shaped substrate, said pressing device having an abutment portion that is brought into abutment with the disk-shaped substrate, a moving mechanism that moves said  
15       abutment portion in an approaching one of directions toward and away from said cutting edge of said punching blade section to thereby press the disk-shaped substrate, and an ultrasonic generator that causes ultrasonic vibration of said abutment portion; and

20       a control section that controls operation of said pressing device by causing said moving mechanism to move said abutment portion in the approaching direction and causing said ultrasonic generator to perform ultrasonic vibration at least from a time point at  
25       which the disk-shaped substrate is brought into contact with said cutting edge of said punching blade section to a time point at which punching of the central hole is completed.

30       2. An optical recording medium-manufacturing apparatus as claimed in claim 1, further comprising a positioning protrusion disposed in a central portion of said punching blade section in a manner slidable in the toward and away directions, and a first urging device

that urges the positioning protrusion toward said pressing device, and

wherein said positioning protrusion is configured such that said positioning protrusion has a foremost  
5 end thereof protruded toward said pressing device with respect to said cutting edge of said punching blade section, and at the same time is capable of being inserted into a positioning hole formed in a central  
10 portion of the disk-shaped substrate, the positioning hole having a diameter smaller than a diameter of the central hole, and

wherein said moving mechanism causes said abutment portion to move in the approaching direction to thereby cause said positioning protrusion inserted  
15 in the positioning hole to move in the approaching direction together with the disk-shaped substrate, to thereby cause said punching blade section to be pushed into the disk-shaped substrate.

3. An optical recording medium-manufacturing  
20 apparatus as claimed in claim 1, further comprising a substrate-receiving table formed with an insertion hole in a central portion thereof for allowing insertion of said punching blade section such that said substrate receiving table is slidable with respect to said  
25 punching blade section in the toward and away directions, and a second urging device that urges said substrate-receiving table toward said pressing device, said substrate-receiving table being normally positioned such that a surface of said substrate-  
30 receiving table which is brought into contact with the disk-shaped substrate is closer to said pressing device with respect to said cutting edge of said punching blade section, and

wherein said moving mechanism causes said abutment portion to move in the approaching direction, to thereby cause said substrate-receiving table to move in the approaching direction together with the disk-shaped substrate to cause said punching blade section to be pushed into the disk-shaped substrate, and

wherein said substrate-receiving table causes the disk-shaped substrate to move in the approaching direction when the disk-shaped substrate is pressed by said moving mechanism.

4. An optical recording medium-manufacturing apparatus as claimed in claim 3, wherein said second urging device is implemented by air cylinders.

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5. An optical recording medium-manufacturing apparatus as claimed in claim 1, further comprising a substrate-holding section that sucks a portion of the disk-shaped substrate outward of an area where the central hole is formed, to thereby hold the disk-shaped substrate, and a punched piece-holding section that holds a punched piece which is punched off the disk-shaped substrate by said punching blade section.

6. An optical recording medium-manufacturing apparatus as claimed in claim 1, wherein said ultrasonic generator causes longitudinal vibration of said abutment portion.

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